

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-31-17
Relating to Certification of New Motor Vehicle Heavy-Duty Engines

HINO MOTORS, LTD.

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102, and 43103 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-3;

IT IS ORDERED AND RESOLVED: That the following Hino Motors, Ltd. 1987 model-year diesel engines have shown compliance with the transient test procedure and standards and are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating greater than 8500 pounds:

<u>Engine Family</u>	<u>Displacement Cubic Inches (Liters)</u>	<u>Exhaust Emission Control Systems (Special Features)</u>
HHM0060DAA9	367 (6.0)	Engine Modification (Diesel Injection - Direct)
HHM0065EAA0	396 (6.5)	Engine Modification (Diesel Injection - Direct) (Turbocharger)
HHM0067DAA4	411 (6.7)	Engine Modification (Diesel Injection - Direct)
HHM0094DAA7	575 (9.4)	Engine Modification (Diesel Injection - Direct)

Engine models and codes are listed on attachments.

The following are the certification emission values for these engine families:

<u>Engine Family</u>	<u>Hydrocarbons gm/bhp-hr</u>	<u>Carbon Monoxide gm/bhp-hr</u>	<u>Nitrogen Oxides gm/bhp-hr</u>
HHM0060DAA9	1.0	4.6	4.8
HHM0065EAA0	0.9	1.9	4.8
HHM0067DAA4	0.8	4.3	4.5
HHM0094DAA7	0.6	2.5	4.4

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BE IT FURTHER RESOLVED: That the Executive Officer has been provided all material required to demonstrate certification compliance with the Board's emission control system warranty regulations (Title 13, California Administrative Code, Section 2036).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this order.

Executed at El Monte, California this 27th day of June, 1986.



K. D. Drachand, Chief
Mobile Source Division

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MHDD

Manufacturer HINO MOTORS, LTD. Engine Family HHM0060DAA9
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, Natural asp.
 Liters (CID) 6.014 (367)

ABBREVIATIONSIgnition System

CA-Centrifugal Advance
 EEC-Electronic Engine Control
 EI-Electronic Ignition
 ESAC-Electronic Spark Advance
 Control
 VA-Vacuum Advance
 VR-Vacuum Retard

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 CL-Closed Loop
 EGR-Exhaust Gas Recirculation
 EM-Engine Modification
 OC-Oxidation Catalyst System
 SPL-Smoke Puff Limiter or
 Throttle Delay
 TOC-Trip Oxidizer, Continual
 TOP-Trip Oxidizer, Periodical
 TR-Thermal Reactor
 TWC-Three-Way Catalyst System

Special Features

CCV-Combustion
 Chamber Valve
 CFI-Central Fuel
 Injection
 DID-Diesel
 Injection-Direct
 DIP-Diesel
 Injection-Prechamber
 EFI-Electronic
 Fuel Injection
 IC-Intercooler
 or aftercooler
 MFI-Mechanical
 Fuel Injection
 TC-Turbocharger

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV-nVenturi Carburetor

VEHICLE MODELS:

Engine: Front X Mid. Rear
 Drive: FWD RWD X 4WD Full Time 4WD Part Time

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Manufacturer HINO MOTORS, LTD. Engine Family HHMC065EAA0
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, Turbo-charged
 Liters (CID) 6.485 (396)

ABBREVIATIONS

Ignition System

CA-Centrifugal Advance
 EEC-Electronic Engine Control
 EI-Electronic Ignition
 ESAC-Electronic Spark Advance
 Control
 VA-Vacuum Advance
 VR-Vacuum Retard

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 CL-Closed Loop
 EGR-Exhaust Gas Recirculation
 EM-Engine Modification
 OC-Oxidation Catalyst System
 SPL-Smoke Puff Limiter or
 Throttle Delay
 TOC-Trap Oxidizer, Continual
 TOP-Trap Oxidizer, Periodical
 TR-Thermal Reactor
 TWC-Three-Way Catalyst System

Special Features

CCV-Combustion
 Chamber Valve
 CFI-Central Fuel
 Injection
 DID-Diesel
 Injection-
 Direct
 DIP-Diesel
 Injection-
 Prechamber
 EFI-Electronic
 Fuel
 Injection
 IC-Intercooler
 or aftercooler
 MFI-Mechanical
 Fuel
 Injection
 TC-Turbocharger

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV-nVenturi Carburetor

VEHICLE MODELS:

Engine: Front X Mid. Rear
 Drive: FWD RWD X 4WD Full Time 4WD Part Time

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Manufacturer HINO MOTORS, LTD.Engine Family HHM0067DAA4Evaporative Family NAEngine Type L-6, 4 Stroke cycle, Natural asp.Liters (CID) 6.728 (411)

ABBREVIATIONS

Ignition System

CA-Centrifugal Advance
EEC-Electronic Engine Control
EI-Electronic Ignition
ESAC-Electronic Spark Advance
Control
VA-Vacuum Advance
VR-Vacuum Retard

Exhaust Emissions Control System

AIP-Air Injection-Pump
AIV-Air Injection-Valve
CL-Closed Loop
EGR-Exhaust Gas Recirculation
EM-Engine Modification
OC-Oxidation Catalyst System
SPL-Smoke Puff Limiter or
Throttle Delay
TOC-Trap Oxidizer, Continual
TOP-Trap Oxidizer, Periodical
TR-Thermal Reactor
TWC-Three-Way Catalyst System

Special Features

CCV-Combustion
Chamber Valve
CFI-Central Fuel
Injection
DID-Diesel
Injection-
Direct
DIP-Diesel
Injection-
Prechamber
EFI-Electronic
Fuel
Injection
IC-Intercooler
or aftercooler
MFI-Mechanical
Fuel
Injection
TC-Turbocharger

Fuel System

CFI, CL, DID, DIP, EFI, MFI
nV-nVenturi Carburetor

VEHICLE MODELS:Engine: Front X Mid. Rear Drive: FWD RWD X 4WD Full Time 4WD Part Time

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Manufacturer HINO MOTORS, LTD. Engine Family HHM0094DAA7
 Evaporative Family NA Engine Type L-6, 4 Stroke cycle, Natural asp.
 Liters (CID) 9.419 (575)

ABBREVIATIONSIgnition System

CA-Centrifugal Advance
 EEC-Electronic Engine Control
 EI-Electronic Ignition
 ESAC-Electronic Spark Advance
 Control
 VA-Vacuum Advance
 VR-Vacuum Retard

Exhaust Emissions Control System

AIP-Air Injection-Pump
 AIV-Air Injection-Valve
 CL-Closed Loop
 EGR-Exhaust Gas Recirculation
 EM-Engine Modification
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 Throttle Delay
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CCV-Combustion
 Chamber Valve
 CFI-Central Fuel
 Injection
 DID-Diesel
 Injection-
 Direct
 DIP-Diesel
 Injection-
 Prechamber
 EFI-Electronic
 Fuel
 Injection
 IC-Intercooler
 or aftercooler
 MFI-Mechanical
 Fuel
 Injection
 TC-Turbocharger

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV-nVenturi Carburetor

VEHICLE MODELS:

Engine: Front x Mid. Rear

Drive: FWD RWD x 4WD Full Time 4WD Part Time

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HEAVY-DUTY DIESEL ENGINES

Manufacturer HINO MOTORS, LTD. Engine Family HF0060DAA9
 Liter (CID) 6.014 (367) Eng. Type L-6, 4 Stroke cycle, Natural asp.
 Emission Control Sys. and (Special Features) Engine Modification

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. Part Number	Maximum Rated HP at RPM	Fuel Rate $\text{mm}^3/\text{stroke}$ (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate $\text{mm}^3/\text{stroke}$ (lbs/Hr)
W06E-C	Diesel KiKi 22000-4990	Diesel KiKi 23600-1730	150@ 3,000	61 (59.8)	268@ 1,800	60 (35.3)

Date of Issue May 10, 1986 Revisions:

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HEAVY-DUTY DIESEL ENGINES

Manufacturer HINO MOTORS, LTD. Engine Family HHM0065FAA0
 Liter (CID) 6.485 (396) Eng. Type L-6, 4 Stroke cycle, Turbo-charged
 Emission Control Sys. and (Special Features) Engine Modification

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. Part Number	Maximum Rated HP at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)
H06C-TD	Nippon Denso 22010-3782	Nippon Denso 23610-1412	175@ 3,000	73 (71.5)	383@ 1,600	83 (43.4)

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HEAVY-DUTY DIESEL ENGINES

Manufacturer HINO MOTORS, LTD. Engine Family HHM0067DAA4
 Liter (CID) 6.728 (411) Eng. Type L-6, 4 Stroke cycle, Natural asp.
 Emission Control Sys. and (Special Features) Engine Modification

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. Part Number	Maximum Rated HP at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)
H07C-C	Nippon Denso 22010-4051	Nippon Denso 23610-1390	155@ 3,000	67 (65.7)	297@ 1,800	65 (38.2)

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HEAVY-DUTY DIESEL ENGINES

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 Liter (CID) 9.419 (575) Eng. Type L-6, 4 Stroke cycle, Natural asp.
 Emission Control Sys. and (Special Features) Engine Modification

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. Part Number	Maximum Rated HP at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)
EM100F	Nippon Denso 22010-4101 (For Manual Transmission)	Nippon Denso 23610-1430	190@ 2,700	88 (77.6)	427@ 1,600	93 (48.6)
	Nippon Denso 22010-4440 (For Automatic Transmission)					

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